



BSC 513 01W & 01B, Molecular Genetics (CRN: 22307 & 22308)

Spring , 2025 (11/28/2025–05/09/2025)

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eCompanion Site:	D2L Brightspace @ MyLeo
Electronic Office hours:	Mon, Wed, Fri 1 PM–2 PM Office hrs will be conducted via Zoom in D2L. Or by appointment, include BSC 513 Molecular Genetics in subject line of E-mails.

Course overview:

This course is designed for students who have taken introductory genetics and have a general familiarity with cell and molecular biology. Therefore, this course provides students with an in-depth investigation into DNA technology and practical application of genetic study. Emphasis will be placed on eukaryotic gene mapping, gene functional studies and on genomics, and its practical applications. Students are expected to gain an in-depth understanding of analysis, strategy and experimental logic used in deriving the basic principles and concepts of genetics at the molecular level.

Student Learning Outcomes (SLO):

At the completion of this course students will be able to:

1. Describe the development of gene concept.
2. Describe the molecular structure of genetic material and its replication.
3. Describe the molecular basis of mutations and DNA repair.
4. Describe molecular mechanisms of recombination and transposition
5. Understand methods of gene mapping and cloning of genes.

Required Textbook:

GENETICS: ANALYSIS+PRINCIPLES 8th edition, ISBN: 1266823816

We will cover part of the subject matter presented in this book, but not necessarily in order. Chapter assignments are listed on the Course Schedule. Subject material of this course is built on facts and concepts covered in undergraduate courses at A&M-Commerce BSC 303 Cell Biology and BSc 304 Genetics. Those who haven't finished these courses may find this course difficult. Therefore, I highly recommend you to review materials from your undergraduate genetics/cell biology/molecular biology courses.

INSTRUCTION METHOD

This syllabus is a suggested outline. It represents the minimum material that we will cover in this course. Dates are approximate and subject to change. If there is any major changes to the syllabus it will be posted in e-College and the syllabus will be updated accordingly. You are responsible for keeping up with any changes made to the syllabus. *You may be tested on any material listed in the syllabus, on your class page and discussed in class.*

Web-Based Course: The structure of this course is predicated at student reading. Considering enormous volume of information available in genetic engineering, it is impossible to cover everything in a course. ***Since it is a summer course it will be rather intense and 2 chapters of reading will be required per week. This means you need to spend a considerable amount of time in studying and integrating the materials.*** I have selected these chapters to provide basics in Molecular Genetics. PowerPoint slides, additional reading materials as well as activities will be included to help your learning. Your progress in this course will be measured using weekly quizzes, two exams (a mid-term and a final), and a debate topic. You can monitor your progress in D2L Gradebook.

How to Succeed in the Class: For successful course completion, your active and timely participation is essential. As an online class on Molecular Genetics, I expect that you have a back ground in molecular/cell biology and genetics. You must read chapters prescribed for each week and go through additional lecture materials, assignments and activities. From my prior experience, exchanging e-mails are poor strategies of online learning, therefore, ***I encourage to clear any questions that you may have during electronic office hours (MWF 2–3 PM) via Zoom feature available in D2L-Brightspace.***

Class Policies:

In an online class students are required to be self learners and self-directed. The fact that you might be taking several online classes and working full time may put additional pressure on you, but would not be considered as a reason for diluting the rigor of this course. This class will keep the rigor, time line, and standards of a face-to-face class.

E-mail and Communication: If you are e-mailing me please use your university e-mail account and put BSC 513, Molecular Genetics in subject line. If you use an e-mail account without an “.edu” extension, it may end up in my spam folder. During work days, I will respond to e-mails that I receive within 24 hrs. Since I check e-mails occasionally on weekends, e-mails received on weekends will be responded on the next working day. Most of the correspondence will be announced on the course homepage, therefore check course homepage in D2L-Brightspace as-often-as possible.

Electronic Office Hours: You may access office hours on **Monday, Wednesday, and Friday at 1–2 PM CST.**

Lecture Materials: Power Point slides that I use for delivering lectures are available in D2L. However, I would like to stress that ***Power Point slides that I use for my lectures must not be treated as lecture notes. You may use it as a reference or guide to read the book but not as study material.*** If you ONLY use the PowerPoint slides for study, you may not perform good in tests. ***Materials provided in this course including lecture slides are copy righted and must not share them without obtaining permission.***

Overview of Assignments:

1. **Weekly Quizzes (20% of Total):** After covering each unit, there will be a quiz which needs to be taken online in D2L. Quizzes are due @11.59 PM on specified dates in the course calendar. ***If you miss a quiz or perform poorly, there won't be any makeup quiz.***
2. **Problem Solving Assignments (20% of total):** At the end of each unit/chapter, a set of problem solving questions will be assigned, which are due in a week. It works for your advantage to solve these problems by yourself as you go along the week, which will increase your success in weekly quizzes and later in exams. Solving problem sets will also augment concepts covered in lectures and help you retain them.

Completed problem sets must be submitted in D2L; note that emailed copies of problem sets would not be evaluated and credited "zero" points. For full credit assignment must include detailed steps of problem solving.

Exams and Grades: There will be two exams including the final. Exam questions will test critical thinking, analytical ability, and the understanding of subject matter. Therefore, it is important to understand the concepts. ***If you miss an exam for reasons other than university-approved emergencies, make up exams would not be provided. In the event of a make up examination, it will be provided only in the A&M-Commerce campus, that means you need to travel to the campus.***

Grading Policy:

Weekly Quizzes	= 80 points (20%)
Four exams including the final	=240 points (60%)
Assignments (Problem Sets)	= 80 points (20%)
Total	= 400 points

Grading Scale:

A = $\geq 90\%$
B = $\geq 80\%$
C = $\geq 70\%$
D = $\geq 58\%$
F = $\leq 58\%$

To calculate where you stand: Your up to date scores and percentage will be available in the grade book of D2L. Add your 3 exam scores, scores in assignments, and quizzes and calculate the percentage out of 400, This will be your grade in 10 point system.

Course Calendar and Exam Schedule:

Units	Date	Chapters	Topic
Unit 1	Jan 13 – Jan 17 Quiz Due at 11.59 PM on Jan 23	Chapter 1	Introduction to Genetics
Unit 2	Jan 20 – Jan 24 Quiz Due at 11.59 PM on	Chapter 2	Basic Mendelian Inheritance

	Jan 30		
Unit 3	Jan 27 – Jan 31 Quiz Due at 11.59 PM on Feb 6	Chapter 3	Reproduction, Cell Division, and Chromosome Theory of Inheritance
Unit 4	Feb 3 – Feb 7 Quiz Due at 11.59 PM on Feb 13	Chapter 4	Extensions of Mendelian Inheritance
Exam I, Feb 14			
Unit 5	Feb 10 – Feb 14 Quiz Due at 11.59 PM on Feb 20	Chapter 6	Linkage and Gene Mapping
Unit 6	Feb 17 – Feb 21 Quiz Due at 11.59 PM on Feb 27	Reading material	Development of Current Gene Concept
Unit 7	Feb 24 – Feb 28 Quiz Due at 11.59 PM on March 6	Chapters 9-10	DNA and Chromosome Structure
Unit 8	March 3 – March 7 Quiz Due at 11.59 PM on March 20	Chapter 11	DNA Replication
Exam II, March 21			
Unit 9	March 17 – March 28 Quiz Due at 11.59 PM on April 3	Chapter 19	DNA Mutation and Repair
Unit 10	March 31 – April 4 Quiz Due at 11.59 PM on April 10	Chapters 19 & 10	Recombination and Transposition
Exam III, April 11			
Unit 11	April 7 – April 18 Quiz Due at 11.59 PM on April 24	Chapters 20-22 Reading material	Gene cloning & Sequencing
Unit 12	April 21 – May 2	Chapter 23 & Reading material	Analyzing Gene Function
Final Exam, May 6 (Tuesday)			

★ **ALL DATES AND ASSIGNMENTS ARE TENTATIVE AND MAY SUBJECT TO CHANGE**

Sample Study Week:

Step 1–Download lecture slides and supporting materials from D2L.

Step 2–**Critically** read chapters and supporting materials, make notes (*simply going through the materials are not going to be enough, focus on concepts, molecular mechanisms etc..*)

Step 3—Complete assignments and upload into D2L by due date.

Step 4—Review materials and your notes and participate in office hours to clear any questions that you may have.

Step 5—Take online quizzes in D2L when they are due.

Step 6—Review again before the test due date and take online tests.

Academic Integrity: A Texas A&M University-Commerce student does not lie, cheat, steal, and does not tolerate those who do. A violation of the Texas A&M honor code and academic integrity involves any of the following offenses: cheating, fabrication, falsification, multiple submissions, plagiarism, and complicity in any of these offenses. The first instance of cheating will result in "ZERO" on the exam and/or on the assignment. The second instance of cheating will result in "ZERO" on the course. Cheating involves copying information from another student, non-allowable materials or source and plagiarism. Once again, violations of academic integrity will not be tolerated. This class will be conducted in strict observance of the Honor Code. Refer to your Student Handbook for details.

Conduct Policy: All students enrolled at the University shall follow the tenets of common decency and acceptable behavior conducive to a positive learning environment. (See Student's Guide Handbook, Policies and Procedures, Conduct).

Behavior: *All students enrolled at the University shall follow the tenets of common decency and acceptable behavior conducive to a positive learning environment." (See Student's Guide Handbook, Policies and Procedures, Conduct).*

<http://www.tamuc.edu/academics/universityCollege/successCoaches/default.aspx>

Plagiarism: Plagiarism is a criminal activity. You must cite all sources of information. Unreferenced and non-paraphrased copying of material, whether parts of sentences, whole sentences, paragraphs, or entire articles can result in a score of zero for your assignment and may result in further disciplinary action.

Piracy: *Materials provided in this course including lecture slides are copy righted and must not share them without obtaining permission.*

Students with Disabilities/Reasonable Accommodation: *The Americans with Disabilities Act (ADA) is a federal anti-discrimination statute that provides comprehensive civil rights protection for persons with disabilities. Among other things, this legislation requires that all students with disabilities be guaranteed a learning environment that provides for reasonable accommodation of their disabilities. If you have a disability requiring an accommodation, please contact: Office of Student Disability Resources and Services, Texas A&M University-Commerce*

Gee Library, Room 132

Phone (903) 886-5150 or (903) 886-5835

Fax (903) 468-8148

StudentDisabilityServices@tamuc.edu

If you have not taken a course in e-College before, please use the tutorial provided for

students in D2L. It will save you a lot of time and frustration and a lot faster than trial and error.

ACCESS AND NAVIGATION

D2L Brightspace Access and Log in Information

This course will be facilitated using D2L Brightspace, the learning management system used by Texas A&M University-Commerce. To get started with the course, go to [myLeo](#) and from App window select [MyLeoOnline \(D2L Brightspace\) App](#). From home menu choose your course. You will need your campus-wide ID (CWID) and password to log into the course. If you do not know your CWID or have forgotten your password, contact the Center for IT Excellence (CITE) at 903.468.6000 or helpdesk@tamuc.edu.

Note: It is strongly recommended you perform a “Browser Test” prior to the start of your course.

TECHNOLOGY REQUIREMENTS

Browser support

D2L is committed to performing key application testing when new browser versions are released. New and updated functionality is also tested against the latest version of supported browsers. However, due to the frequency of some browser releases, D2L cannot guarantee that each browser version will perform as expected. If you encounter any issues with any of the browser versions listed in the tables below, contact D2L Support, who will determine the best course of action for resolution. Reported issues are prioritized by supported browsers and then maintenance browsers.

Supported browsers are the latest or most recent browser versions that are tested against new versions of D2L products. Customers can report problems and receive support for issues. For an optimal experience, D2L recommends using supported browsers with D2L products.

Maintenance browsers are older browser versions that are not tested extensively against new versions of D2L products. Customers can still report problems and receive support for critical issues; however, D2L does not guarantee all issues will be addressed. A maintenance browser becomes officially unsupported after one year.

Note the following:

Ensure that your browser has JavaScript and Cookies enabled.

For desktop systems, you must have Adobe Flash Player 10.1 or greater.

The Brightspace Support features are now optimized for production environments when using the Google Chrome browser, Apple Safari browser, Microsoft Edge browser, Microsoft Internet Explorer browser, and Mozilla Firefox browsers.

Desktop Support

Browser	Supported Browser Version(s)	Maintenance Browser Version(s)
Microsoft® Edge	Latest	N/A
Microsoft®	N/A	11

Internet Explorer®		
Mozilla® Firefox®	Latest, ESR	N/A
Google® Chrome™	Latest	N/A
Apple® Safari®	Latest	N/A

Tablet and Mobile Support

Device	Operating System	Browser	Supported Browser Version(s)
Android™	Android 4.4+	Chrome	Latest
Apple	iOS®	Safari, Chrome	The current major version of iOS (the latest minor or point release of that major version) and the previous major version of iOS (the latest minor or point release of that major version). For example, as of June 7, 2017, D2L supports iOS 10.3.2 and iOS 9.3.5, but not iOS 10.2.1, 9.0.2, or any other version. Chrome: Latest version for the iOS browser.
Windows	Windows 10	Edge, Chrome, Firefox	Latest of all browsers, and Firefox ESR.

- You will need regular access to a computer with a broadband Internet connection. The minimum computer requirements are:
 - 512 MB of RAM, 1 GB or more preferred
 - Broadband connection required courses are heavily video intensive
 - Video display capable of high-color 16-bit display 1024 x 768 or higher resolution
- You must have a:
 - Sound card, which is usually integrated into your desktop or laptop computer
 - Speakers or headphones.

- *For courses utilizing video-conferencing tools and/or an online proctoring solution, a webcam and microphone are required.
- Both versions of Java (32 bit and 64 bit) must be installed and up to date on your machine. At a minimum Java 7, update 51, is required to support the learning management system. The most current version of Java can be downloaded at: [JAVA web site](http://www.java.com/en/download/manual.jsp)
<http://www.java.com/en/download/manual.jsp>
- Current anti-virus software must be installed and kept up to date.

Running the browser check will ensure your internet browser is supported.

Pop-ups are allowed.

JavaScript is enabled.

Cookies are enabled.

- You will need some additional free software (plug-ins) for enhanced web browsing. Ensure that you download the free versions of the following software:
 - [Adobe Reader](https://get.adobe.com/reader/) <https://get.adobe.com/reader/>
 - [Adobe Flash Player](https://get.adobe.com/flashplayer/) (*version 17 or later*) <https://get.adobe.com/flashplayer/>
 - [Adobe Shockwave Player](https://get.adobe.com/shockwave/) <https://get.adobe.com/shockwave/>
 - [Apple Quick Time](http://www.apple.com/quicktime/download/) <http://www.apple.com/quicktime/download/>
- At a minimum, you must have Microsoft Office 2013, 2010, 2007 or Open Office. Microsoft Office is the standard office productivity software utilized by faculty, students, and staff. Microsoft Word is the standard word processing software, Microsoft Excel is the standard spreadsheet software, and Microsoft PowerPoint is the standard presentation software. Copying and pasting, along with attaching/uploading documents for assignment submission, will also be required. If you do not have Microsoft Office, you can check with the bookstore to see if they have any student copies.

ACCESS AND NAVIGATION

You will need your campus-wide ID (CWID) and password to log into the course. If you do not know your CWID or have forgotten your password, contact the Center for IT Excellence (CITE) at 903.468.6000 or helpdesk@tamuc.edu.

Note: Personal computer and internet connection problems do not excuse the requirement to complete all course work in a timely and satisfactory manner. Each student needs to have a backup method to deal with these inevitable problems. These methods might include the availability of a backup PC at home or work, the temporary use of a computer at a friend's home, the local library, office service companies, Starbucks, a TAMUC campus open computer lab, etc.

COMMUNICATION AND SUPPORT

Brightspace Support

Need Help?

Student Support

If you have any questions or are having difficulties with the course material, please contact your Instructor.

Technical Support

If you are having technical difficulty with any part of Brightspace, please contact Brightspace Technical Support at 1-877-325-7778 or click on the **Live Chat** or click on the words "click here" to submit an issue via email.



System Maintenance

Please note that on the 4th Sunday of each month there will be System Maintenance which means the system will not be available 12 pm-6 am CST.

COMMUNICATION AND SUPPORT

All e-mail received during normal business hours will be replied within 48 hrs and e-mails received during weekends will be responded on the following Monday.

COURSE AND UNIVERSITY PROCEDURES/POLICIES

Syllabus Change Policy

The syllabus is a guide. Circumstances and events, such as student progress, may make it necessary for the instructor to modify the syllabus during the semester. Any changes made to the syllabus will be announced in advance.

University Specific Procedures

All students enrolled at the University shall follow the tenets of common decency and acceptable behavior conducive to a positive learning environment. The Code of Student Conduct is described in detail in the [Student Guidebook](#).
<http://www.tamuc.edu/admissions/registrar/documents/studentGuidebook.pdf>

Students should also consult the Rules of Netiquette for more information regarding how to interact with students in an online forum: [Netiquette](#)
<http://www.albion.com/netiquette/corerules.html>

TAMUC Attendance

For more information about the attendance policy please visit the [Attendance](#) webpage and [Procedure 13.99.99.R0.01](#).
<http://www.tamuc.edu/admissions/registrar/generalInformation/attendance.aspx>

<http://www.tamuc.edu/aboutUs/policiesProceduresStandardsStatements/rulesProcedures/13students/academic/13.99.99.R0.01.pdf>

Academic Integrity

Students at Texas A&M University-Commerce are expected to maintain high standards of integrity and honesty in all of their scholastic work. For more details and the definition of academic dishonesty see the following procedures:

[Undergraduate Academic Dishonesty 13.99.99.R0.03](#)

<http://www.tamuc.edu/aboutUs/policiesProceduresStandardsStatements/rulesProcedures/13students/undergraduates/13.99.99.R0.03UndergraduateAcademicDishonesty.pdf>

[Graduate Student Academic Dishonesty 13.99.99.R0.10](#)

<http://www.tamuc.edu/aboutUs/policiesProceduresStandardsStatements/rulesProcedures/13students/graduate/13.99.99.R0.10GraduateStudentAcademicDishonesty.pdf>

Use of Artificial Intelligence, Open AI, Chat GPT, Chat Bot Software Statement

Texas A&M University-Commerce acknowledges that there are legitimate uses of Artificial Intelligence, ChatBots, or other software that has the capacity to generate text, or suggest replacements for text beyond individual words, as determined by the instructor of the course.

Any use of such software must be documented. Any undocumented use of such software constitutes an instance of academic dishonesty (plagiarism).

Individual instructors may disallow entirely the use of such software for individual assignments or for the entire course. Students should be aware of such requirements and follow their instructors' guidelines. **If no instructions are provided the student should assume that the use of such software is disallowed.**

In any case, students are fully responsible for the content of any assignment they submit, regardless of whether they used an AI, in any way. This specifically includes cases in which the AI plagiarized another text or misrepresented sources.

13.99.99.R0.03 Undergraduate Academic Dishonesty

<https://inside.tamuc.edu/aboutus/policiesproceduresstandardsstatements/rulesprocedures/13students/undergraduates/13.99.99.R0.03UndergraduateAcademicDishonesty.pdf>

13.99.99.R0.10 Graduate Student Academic Dishonesty

<https://inside.tamuc.edu/aboutus/policiesproceduresstandardsstatements/rulesprocedures/13students/graduate/13.99.99.R0.10.pdf>

Students with Disabilities

The Americans with Disabilities Act (ADA) is a federal anti-discrimination statute that provides comprehensive civil rights protection for persons with disabilities. Among other things, this

legislation requires that all students with disabilities be guaranteed a learning environment that provides for reasonable accommodation of their disabilities. If you have a disability requiring an accommodation, please contact:

Office of Student Disability Resources and Services

Texas A&M University-Commerce Gee Library- Room 132

Phone (903) 886-5150 or (903) 886-5835

Fax (903) 468-8148

Email: Rebecca.Tuerk@tamuc.edu

Website: [Office of Student Disability Resources and Services](#)

<http://www.tamuc.edu/campusLife/campusServices/studentDisabilityResourcesAndServices/>

Texas A&M University-Commerce will comply in the classroom, and in online courses, with all federal and state laws prohibiting discrimination and related retaliation on the basis of race, color, religion, sex, national origin, disability, age, genetic information or veteran status. Further, an environment free from discrimination on the basis of sexual orientation, gender identity, or gender expression will be maintained.

Campus Concealed Carry Statement

Texas Senate Bill - 11 (Government Code 411.2031, et al.) authorizes the carrying of a concealed handgun in Texas A&M University-Commerce buildings only by persons who have been issued and are in possession of a Texas License to Carry a Handgun.

Qualified law enforcement officers or those who are otherwise authorized to carry a concealed handgun in the State of Texas are also permitted to do so. Pursuant to Penal Code (PC) 46.035 and A&M-Commerce Rule 34.06.02.R1, license holders may not carry a concealed handgun in restricted locations.

For a list of locations, please refer to the [Carrying Concealed Handguns On Campus](#) document and/or consult your event organizer.

Web url: <http://www.tamuc.edu/aboutUs/policiesProceduresStandardsStatements/rulesProcedures/34SafetyOfEmployeesAndStudents/34.06.02.R1.pdf>

Pursuant to PC 46.035, the open carrying of handguns is prohibited on all A&M- Commerce campuses. Report violations to the University Police Department at 903- 886-5868 or 9-1-1.